

## CLAIMS

We claim:

1. Substantially spherical alkali metal bicarbonate particles having a median particle size of from about 0.2 up to less than 1.0  $\mu\text{m}$  and a surface area of from about 120 to about 140  $\text{cm}^3/\text{g}$ .

2. The alkali metal bicarbonate particles of claim 1, wherein the particles have a median particle size of from about 0.4 to about less than 1.0  $\mu\text{m}$ .

3. A slurry comprising substantially spherical, micron-sized and/or submicron sized alkali metal bicarbonate particles, said particles having a median particle size of from about 0.2 to about 50.0  $\mu\text{m}$  and a surface area of from about 120 to about 140  $\text{cm}^3/\text{g}$ , dispersed in a liquid medium, wherein the slurry has a loose bulk density of about 1.40 to about 1.60 grams per mL and a Zeta potential of about 2 to about 11 mV.

4. The slurry of claim 3, wherein the alkali metal bicarbonate particles have a median particle size of from about 0.2 to about 25.0  $\mu\text{m}$ .

5. The slurry of claim 4, wherein the alkali metal bicarbonate particles have a median particle size of from about 0.5 to about 1.0  $\mu\text{m}$ .

Sub  
A2

6. The slurry of claim 5, wherein the slurry comprises from about 50 to about 80% by weight of the alkali metal bicarbonate and from about 20 to about 50% by weight of liquid medium, based upon 100% total weight of the slurry.

7. The slurry of claim 6, wherein the slurry comprises from about 60 to about 75% by weight of alkali metal bicarbonate and from about 25 to about 40% by weight of liquid medium, based upon 100% total weight of the slurry.

8. The slurry of claim 7, wherein the slurry comprises from about 65 to about 72% by weight of alkali metal bicarbonate and from about 28 to about 45% by weight of liquid medium, based upon 100% total weight of the slurry.

9. The slurry of claim 8, wherein the slurry comprises about 70% by weight of alkali metal bicarbonate and about 30% by weight of liquid medium, based upon 100% total weight of the slurry.

10. The slurry of claim 3, wherein the liquid medium is water.

11. The slurry of claim 3, wherein the alkali metal bicarbonate particles are sodium bicarbonate particles.

12. The slurry of claim 3, wherein the alkali metal bicarbonate particles have an IR spectra shown in Fig. 1.

13. The slurry of claim 3, wherein the slurry has a viscosity of less than about 1,000 cP.

electro  
release

14. A method of using the slurry of claim 3 comprising (1) incorporating said slurry with other materials to form a bicarbonate containing product selected from the group consisting of a dialyzate, a toothpaste, a personal cleanser, a chewing gum, an antacid, a mouthwash, a deodorant, a detergent, a skin care product, a household cleanser, an industrial cleaner, a blasting medium, an animal feed product, a baking product and a pesticidal product by dissolving from about 10.00 to about 12.00% by weight of the slurry in about 88 to about 92% by weight of additional water, based upon 100% total weight of the slurry and additional water to form an aqueous dilution, and (2) further incorporating said other materials.

15. The method of claim 14, wherein said solution is a dialyzate.

16. The method of claim 14, wherein said slurry is diluted.

Res 17. A dialysis dispenser pack containing the slurry of claim 3.

18. The dispenser pack of claim 17 which is a unit of use cartridge for incorporation into a dialysis machine.

19. The dispenser pack of claim 17, wherein the dispenser pack is made from a material selected from the group consisting of glass, plastic, foil and cardboard.

20. A dialysis dispenser containing the slurry of claim 17, wherein the dispenser is a plastic bag.

Res 21. A process of making the slurry of claim 3 which comprises wet mill processing of alkali metal bicarbonate particles having an average particle size of about 175  $\mu\text{m}$  to about 45  $\mu\text{m}$  to prepare alkali metal bicarbonate particles with a median particle size of from about 0.2 to about 50  $\mu\text{m}$ , wherein the large alkali metal bicarbonate particles and water are combined to form an initial charge, said alkali metal bicarbonate particles are present from about 50 to about 80% by weight based on 100% total weight of the initial charge and said water is present from about 20 to about 50% by weight based on 100% total weight of the initial charge, and the wet mill processing of the charge is conducted in a wet media processing mill in the presence of an inert grinding medium at from about 3,000 to about 4,500 rotations per minute for about 8 to about 18 minutes at a temperature of from about 5°C to about 25°C.

22. The process for preparing alkali metal bicarbonate particles of claim 21, wherein the inert grinding medium is 0.4mm Yttrium stabilized zirconia-grinding beads.

23. A product comprising the slurry of claim 3, wherein the product is selected from the group consisting of a dialyzate, a toothpaste, a personal cleanser, a chewing gum, an antacid,

a mouthwash, a deodorant, a detergent, a skin care product, a household cleaner, an industrial cleaner, a blasting medium, an animal feed product, a baking product and a pesticidal product.

24. The product of claim 23, further comprising an adjuvant selected from the group consisting of fragrances, colorants, surfactants, suspending agents, buffers, abrasives, antioxidants, anticorrosives, bacteriocides, fungicides, antiseptics, astringents, humectants, tartar control agents, and mixtures thereof.

25. The product of claim 23, wherein the liquid medium is selected from the group consisting of water, alcohols, glycols, and mixtures thereof.